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DATA SHEET

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NARDA UHF Frequency Meter Detectors

MODELS 804, 805, 806

Operating Instructions

These direct reading frequency meter detectors are portable, self-contained instruments for accurate frequency measurements and detection of signals in the frequency range 200 to 2400 mc.

Each model contains a capacitively tuned resonant cavity, a built-in crystal detector with current indicator and sensitivity control, and a coaxial switch. The coaxial switch directs the cavity output signal to either the crystal detector or the panel output terminal.

A. OPERATION USING INTERNAL METER. This method is used for AM, CW, or pulse modulated signals only. With FM or swept signals, use external oscilloscope indicator.

1. Connect signal to INPUT.
2. Set switch to INTERNAL.
3. Adjust sensitivity control for full scale or maximum possible meter deflection.
4. Slowly tune the frequency meter until the meter current dips. Read frequency from the main tuning dial.

B. OPERATION USING EXTERNAL INDICATOR. This method is most useful when the frequency meter is used with an FM signal generator. The frequency meter then applies a variable marker on an oscilloscope display. Insertion loss is negligible.

1. Connect signal generator to INPUT.
2. Set switch to EXTERNAL.
3. Connect device to be tested, with padding as required, to OUTPUT terminal.
4. Tune frequency meter until marker appears on oscilloscope. Marker frequency is read on the main tuning dial.

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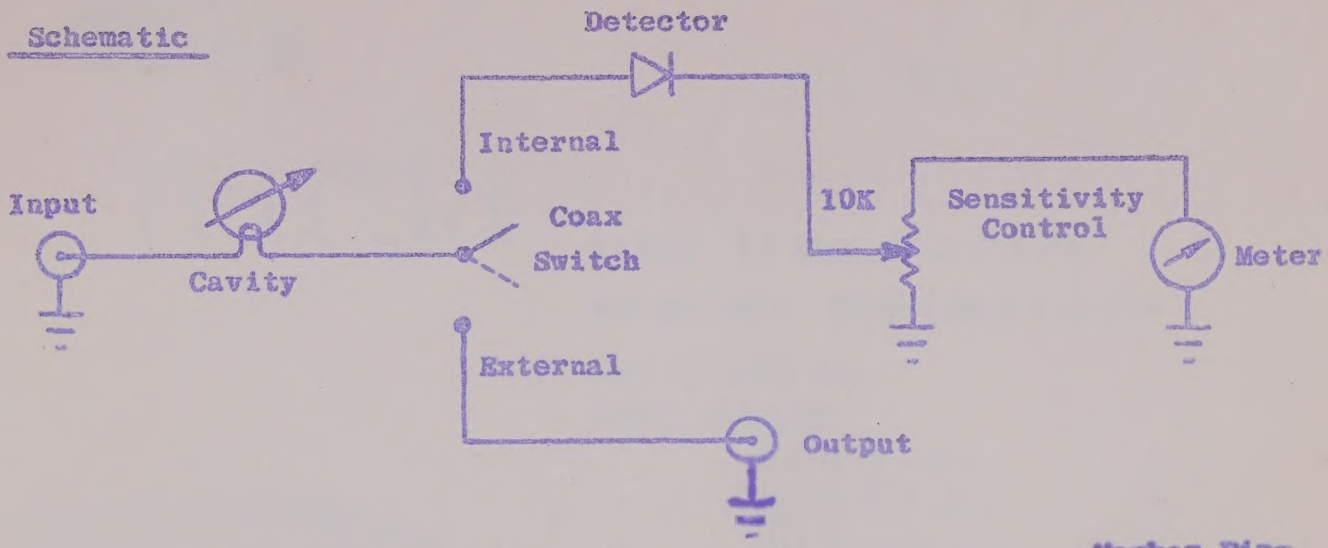
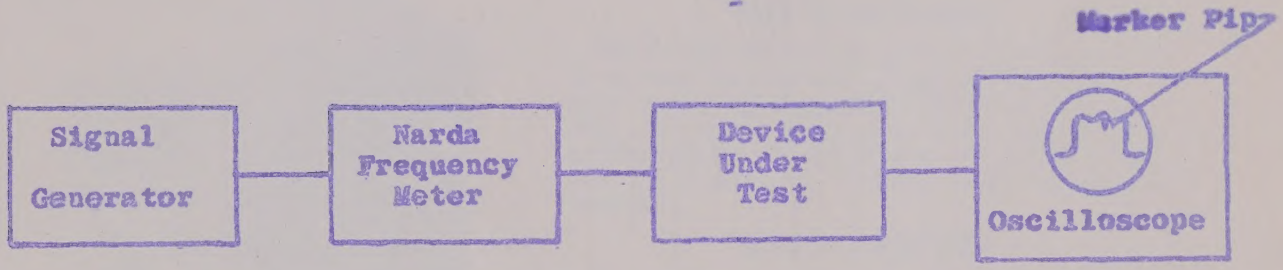
COMPLETE INSTRUMENTATION FOR MICROWAVE AND UHF

Schematic



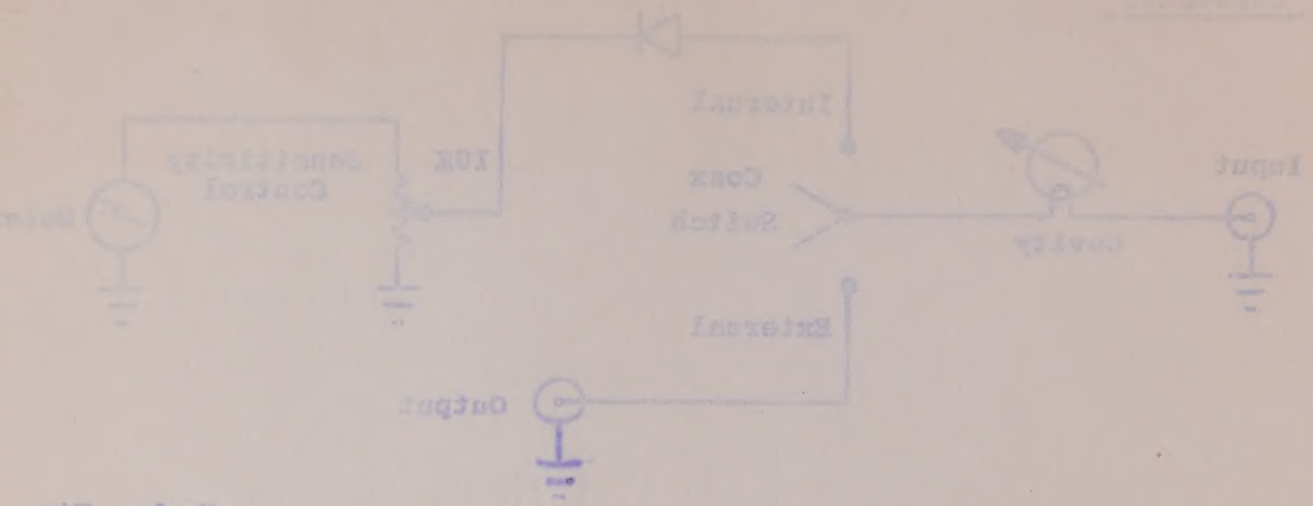


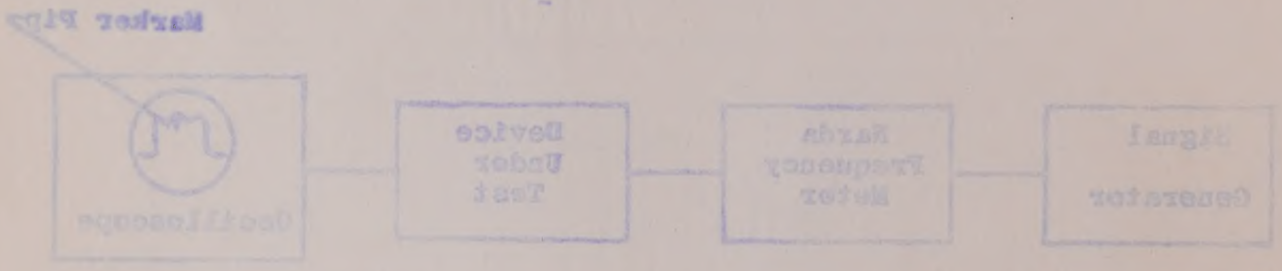
Connection Using External Oscilloscope or Other Indicator

REPLACEMENT OF CRYSTAL. A 1N21B crystal is used in the built-in detector. Crystal failure is evident if no crystal current is found when input power is applied. Replace following steps:

1. Remove vernier tuning knob. CAUTION: Do not loosen set screws on main tuning dial, since this will affect the calibration.
2. Remove the four knurled screws in the panel and lift the panel from the box.
3. Unscrew the plastic cap on the detector. The turret lug in the cap rotates so the wire to the lug will not twist.
4. Remove the crystal with pliers or tweezers.
5. Replace with a good 1N21B crystal.

Crystal replacement does not affect the calibration accuracy.


10K
Coax
Switch
Input
Output


Marker Pip
Oscilloscope
Device Under Test
Radio Frequency Meter
Signal Generator

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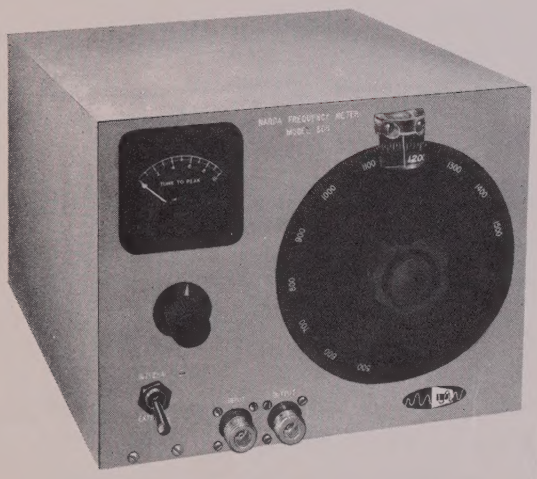
uhf frequency meter detectors

200 TO 2400 MC.

DIRECT READING



MODEL 804—200 to 500 mc.

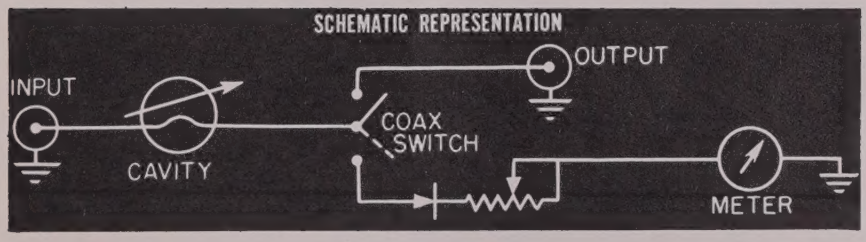
MODEL 805—500 to 1500 mc.

MODEL 806—1500 to 2400 mc.

These direct reading frequency meter detectors are used for accurate frequency measurements and the detection of signals in the UHF range. Each instrument includes a resonant cavity, coaxial switch, crystal detector, current meter, sensitivity control, and type N input and output terminals. They are absorption type frequency meters with very low insertion loss.

SCHEMATIC REPRESENTATION

The input signal causes a meter deflection approximately proportional to the signal level. Frequency is indicated on the direct reading dial by a sharp dip in meter reading when the cavity dial is tuned to resonance. Alternatively, the instrument may be inserted in a transmission line (it has low insertion loss) and the resonant dip may be detected in the external circuit. In this manner the meter may be used as a high Q absorption marker when used with fm signal generators.



SPECIFICATIONS

Frequency (mc)	Accuracy	Loaded Q	VSWR	Sensitivity *	NARDA Model	Price
200— 500	0.5 mc	500	1.15	0.2 mw	804	$375.
500—1500	1 mc	700	1.15	0.2 mw	805	375.
1500—2400	2 mc	500	1.25	0.5 mw	806	375.

**For full scale deflection*

All Models:		
	Insertion Loss	0.2 db
	Smallest dial division	5 mc
	Temperature Coefficient	25 parts per million per °C
	Connectors	Series N
	Dimensions	7 x 9 x 5½ in.

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COMPLETE INSTRUMENTATION FOR MICROWAVE AND UHF

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INSTRUCTION SHEET

NARDA MODELS 809, 810, 811, 812 FREQUENCY METERS

These frequency meters consist of a tunable cavity operating in the TE111 mode, mounted on a section of waveguide, suitable for insertion in a waveguide test set-up. The specifications for these meters are as follows:

Frequency (kmc)	Waveguide (in.)	Accuracy	Loaded Q	NARDA Model	Length	Height (max)
5.85-8.20	1-1/2 x 3/4	0.08%	10,000	812	4	8
7.05-10.0	1-1/4 x 5/8	0.08%	10,000	811	3-1/2	7-3/8
8.20-12.4	1 x 1/2	0.08%	7,000	810	3	6-1/2
12.4-18.0	.702 x.391	0.08%	5,000	809	4	4-1/4

The insertion loss is negligible when the cavity is not tuned to resonance. At resonance, a fraction of the signal power is absorbed by the cavity, causing a dip in power transmitted to the load. This dip is quite sharp due to the high "Q" of the cavity, and may be located by tuning the cavity slowly through the tuning range. The indication (dip) may be observed on any power dectector connected to the waveguide. This may be a crystal detector connected to a milliameter, wattmeter, or similar indicator. For rapid location of frequency, if the signal is modulated, observe the detected output on an oscilloscope and tune the frequency meter rapidly through the band.

The dip is at least 10 percent in a matched system. If the system is matched the dip in power will be symmetrical. If poorly matched, the dip will not be as easy to locate. At least 3 db of attenuation should be used between a klystron oscillator and the frequency meter to prevent "pulling" of the klystron.

Frequencies in between the calibration points supplied may be obtained by interpolation.

Frequency is determined by reading the micrometer when the meter is tuned to resonance as indicated by maximum dip. The micrometer reading is converted to frequency by the calibration table on the housing. The calibration points are accurate to 0.1% and are spaced close enough for linear interpolation. When a frequency meter is purchased with 0.05% accuracy, individual calibration curves are supplied.

DO NOT FORCE THE MICROMETER PAST THE END OF THE TUNING RANGE. No other precautions are necessary if normal care is used to preserve the accuracy of this instrument.

INSTRUCTION SHEET

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NARDA UHF FREQUENCY METER DETECTORS

MODELS 804, 805, 806

OPERATING INSTRUCTIONS

These direct reading frequency meter detectors are portable, self-contained instruments for accurate frequency measurements and detection of signals in the frequency range 200 to 2400 mc.

Each model contains a capacitively tuned resonant cavity, a built-in crystal detector with current indicator and sensitivity control, and a coaxial switch. The coaxial switch directs the cavity output signal to either the crystal detector or the panel output terminal.

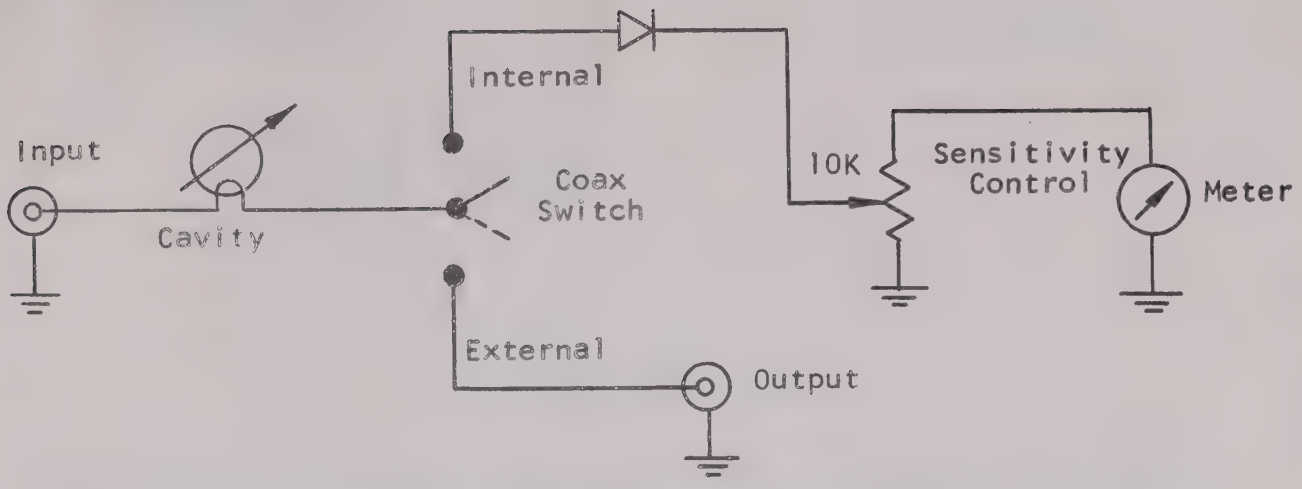
A. OPERATION USING INTERNAL METER. This method is used for AM, CW, or pulse modulated signals only. With FM or swept signals, use external oscilloscope indicator.

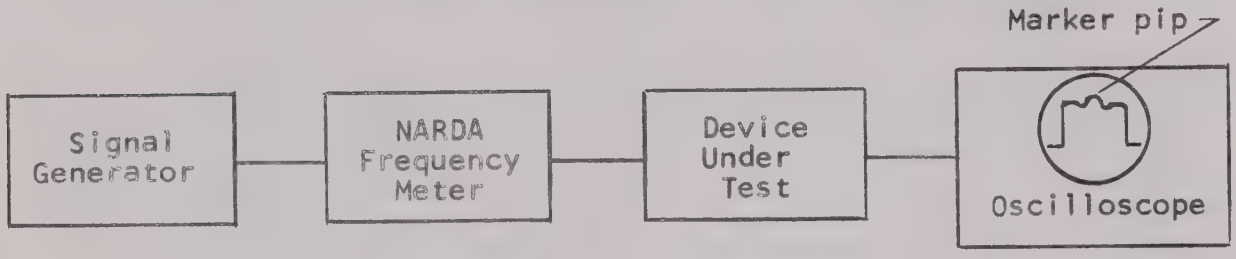
1. Connect signal to INPUT.
2. Set switch to INTERNAL.
3. Adjust sensitivity control for full scale or maximum possible meter deflection.
4. Slowly tune the frequency meter until the meter current dips. Read frequency from the main tuning dial.

B. OPERATION USING EXTERNAL INDICATOR. This method is most useful when the frequency meter is used with an FM signal generator. The frequency meter then applies a variable marker on an oscilloscope display. Insertion loss is negligible.

1. Connect signal generator to INPUT.
2. Set switch to EXTERNAL.
3. Connect device to be tested with padding as required to OUTPUT terminal.
4. Connector detector to output terminal of device under test.
5. Tune frequency meter until marker appears on oscilloscope. Marker frequency is read on the main tuning dial.

SCHEMATIC





Connection Using External Oscilloscope or Other Indicator

REPLACEMENT OF CRYSTAL. A 1N21B crystal is used in the built-in detector. Crystal failure is evident if no crystal current is found when input power is applied. Replace with a new 1N21B according to the following steps:

1. Remove vernier tuning knob. CAUTION: Do not loosen set screws on main tuning dial, since this will affect the calibration.
2. Remove the four knurled screws in the panel and lift the panel from the box.
3. Unscrew the plastic cap on the detector. The turret lug in the cap rotates so the wire to the lug will not twist.
4. Remove the crystal with pliers or tweezers.
5. Replace with a good 1N21B crystal.

Crystal replacement does not affect the calibration accuracy.

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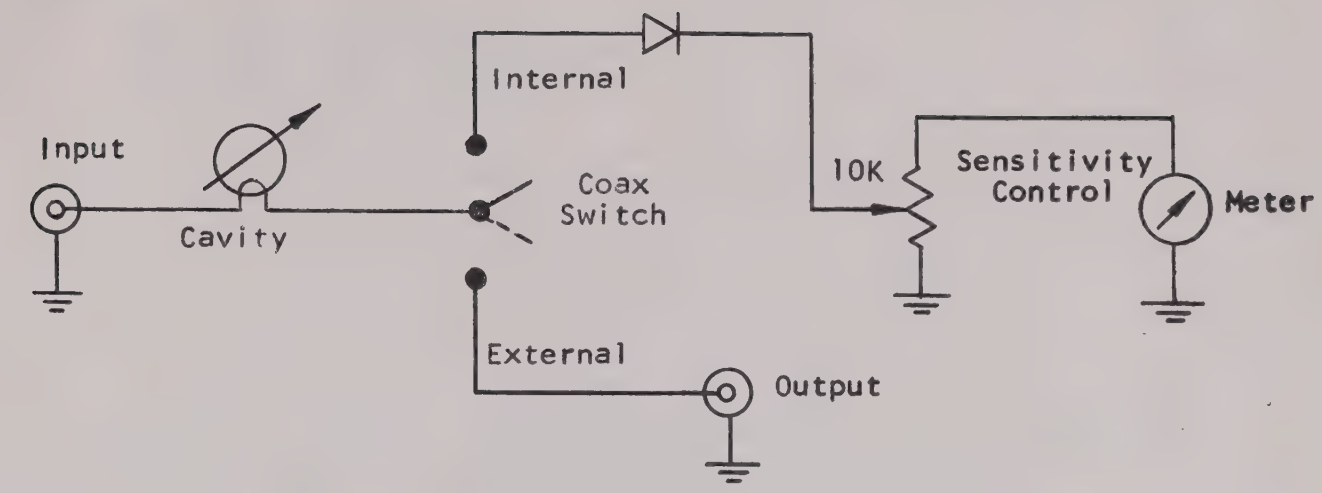

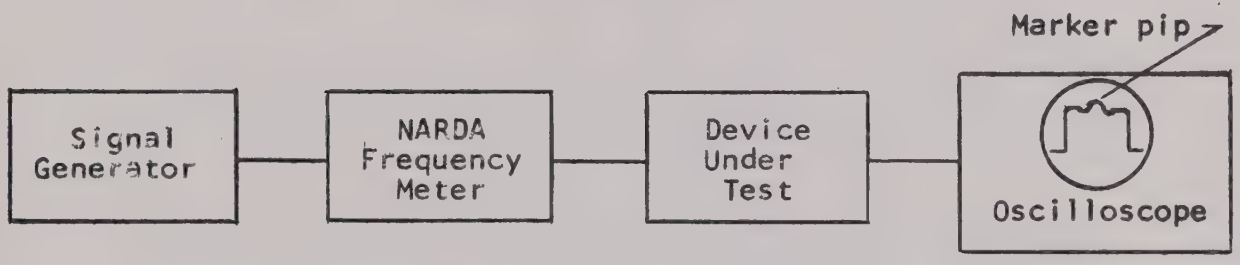

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Manual #3

NARDA UHF FREQUENCY METER DETECTORS

MODELS 804, 805, 806

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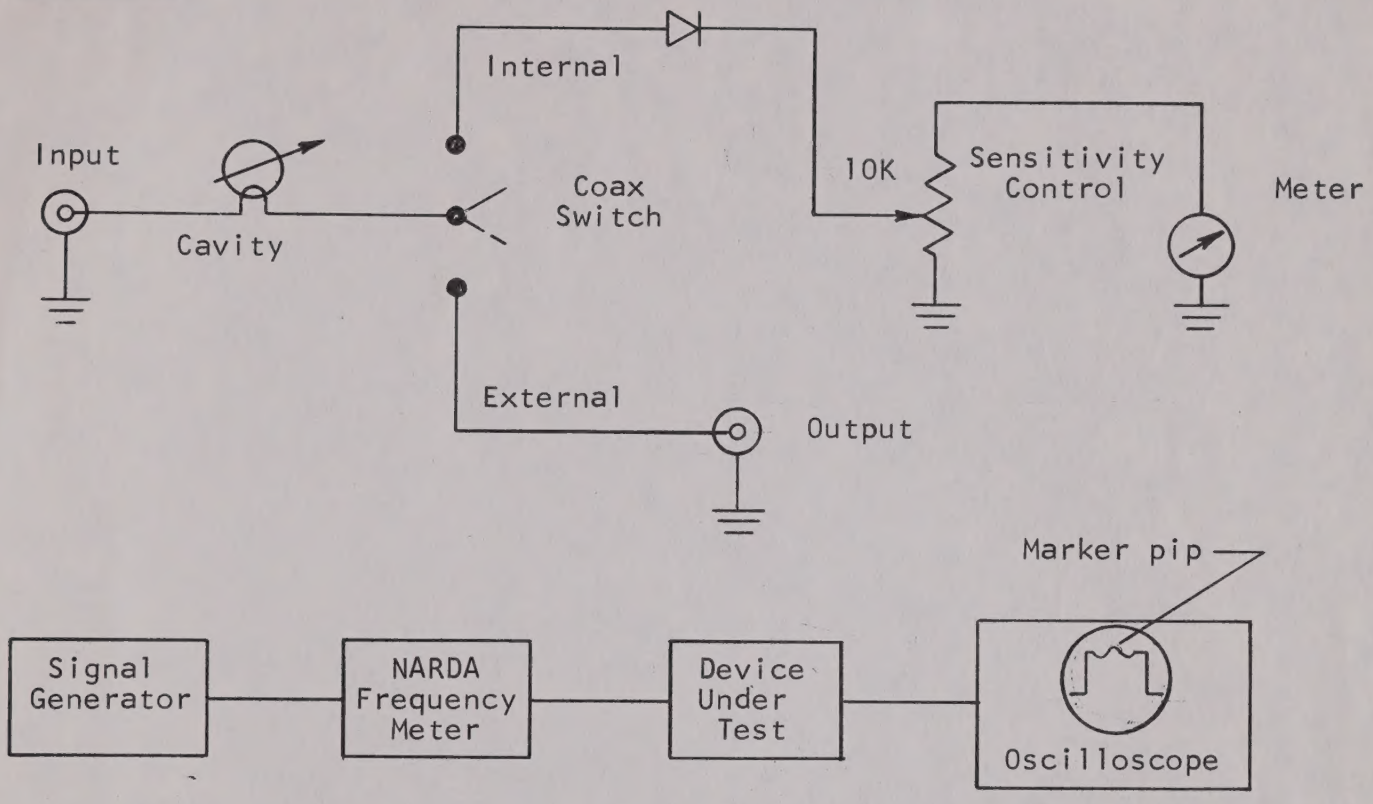

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